

STRATEGIES OF RESEARCH IN DEVELOPING  
EDUCATIONAL AIDS AND TESTS FOR THE  
BLIND.

By Swaran S. Ahuja

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# STRATEGIES OF RESEARCH IN DEVELOPING EDUCATIONAL AIDS AND TESTS FOR THE BLIND

By

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About 200 years ago, the question "Whether blind children can be educated or not ?" itself was a matter of research. It was Valentin Haüy, a Frenchman who decided to experiment and achieved heart warming results. Not only that, he became the motivating spirit behind the work of educating blind children throughout the world.

Very soon we will be celebrating the centenary of work for the blind in India. It is almost a 100 years ago, in fact in 1887 when Miss Annie Sharp started the first school for the blind in Amritsar. This happened quite by chance. Little did she realize that she was starting a new era in the history of education in India by providing educational opportunities to a section of the child community who could not see and were hitherto completely neglected by Society. Perhaps in those days it was not considered possible to teach children without sight, or may be it was not considered necessary to give them education.

It was a spontaneous step taken by Miss Sharp that ushered in the era of education for blind children. Soon afterwards a few more schools were established in different parts of the country - in Bombay, Ahmedabad, Calcutta, Ranchi and Palamcottah in the far south, thousands of miles away from Amritsar. The School for the Blind in Palamcottah has an interesting beginning. One day, Miss Askwith, Principal of the Sarah Tucker College

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while working in her office was harassed by a blind beggar child. To get rid of him she told him that she was giving education and not alms, She was taken aback when the child replied innocently "Please give me education then" - not knowing what he was saying! This little incident motivated Miss Askwith to start a school for blind children.

The 20th Century has seen the establishment of many more schools and today we have almost 250 such institutions striving to impart education to blind children. Many blind children are also being educated under the programme of integrated education in which they study along with their sighted peers. Schools, most of which were started with the idea of providing food and shelter to the children remained for a long time more as orphanages rather than educational institutions. Attempts have been made to improve standards in the schools by following the same syllabus as prescribed for regular schools. Today, intelligent blind children can study upto any level they wish to if they possess the ability.

The progress achieved so far in the field of education of the blind is the result of the hard work and foresight of a few people who were committed to the cause. The questions that faced educators of the blind were : What kind of aids must be devised to impart education ?

By the time work of educating blind children commenced in India, which was about a hundred years later than in the west; a very effective system of reading and writing known as Braille - a tactile script based on six raised dots had been devised by Louis Braille, a Frenchman who was blind himself. The pioneers in work for the blind in India worked out a suitable way to adapt Braille for all Indian languages without which it would have been next to impossible to impart formal education to blind children. The basic necessary equipment and educational aids had also been developed in the western countries. We, in India, are also using these aids.





Tremendous progress has taken place in the development of educational aids in the west. With the help of science and technology very sophisticated and fascinating aids have been developed recently, to minimise the limitations of blindness. To cite just a few, there are very good Braille Writing Machines like the 'Perkins', Electric Braille Writers, Braille Duplicators, Braille Presses etc. Computers are being used to produce Braille literature with speed and efficiency. Much has been done in the production of Talking Books whereby books are recorded on tape cassettes for the use of blind students. Highly sophisticated reading machines like the 'Kurzwell' and the 'Optacon Speech Plus' have been developed. With the help of these machines, blind people can read any printed matter instantly without it having to be recorded or transcribed into Braille. All a person has to do is to place the printed matter in the machine, press a few required keys/buttons and the machine starts to read out the matter in synthetic human speech. These machines are bringing all printed material within the blind persons' reach which hitherto he was deprived of. These machines I believe can only speak in English so far. There are calculators that speak out every figure that you press and Talking Clocks that tell you the time at the press of a button and wake you up with music and pleasing words. All in a synthetic human voice!

There are innumerable other aids - ordinary and extraordinary which are being produced in Japan and in the Western countries. I do not need to list them here as the catalogues of the manufacturers can do the job better. Many of these sophisticated aids are very expensive - the cost running into lakhs of rupees and so beyond the reach of almost all individuals - and definitely all individuals in India.

We, in India have not as yet even reached the stage of providing basic educational aids to our children. We will perhaps have





to wait for decades before we can even think of the very highly sophisticated electronic aids. Therefore, I would stress the importance and urgency of providing the very basic aids and equipment and would like the scientists and technologists to come to our help in developing educational aids and other basic necessary items required every day in the class-room setting. With this end in view I would like to attract the attention of our scientists and technologists to consider strategies of research in the following areas :-

#### Braille Paper :

Paper we use today for writing in Braille is thick - a type of card paper which is bulky. It is not easily available and is rather expensive. As a result of this, the blind children are often not provided with enough paper for their daily work. Many times they have to do without it and in the long run their education suffers.

Paper required for braille writing should ideally be firm, not too thick and soft enough to emboss with ease. It should be easily available and relatively inexpensive. Can ordinary paper be treated in any way so that it may be used satisfactorily for braille writing ? We would like the specialists in research to look into this question.

#### Writing Frames :

Braille is written with the help of special writing frames and braille writing machines. The writing frames are being manufactured in India. It has three components - a Wooden frame with a clamp, a metal guide and a stylus. The blind child has to write from right to left in reverse as the braille dots get embossed at the back of the paper, while in fact, Braille is read from left to right. Therefore, to check what has been written, the paper has to be removed from the clamp, reversed and after checking re-fixed.



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This is a cumbersome and unsatisfactory process. Efforts have been made in the west to device an upward braille writing frame. These have not proved too satisfactory either. In the West now, the braille writing frame is considered obsolete and has been replaced by the upward Braille Writing Machine like the Perkins Brailler which of course is many times more costly. It would be a long time before Braille writing machines will be in common use in India. The blind child will therefore be required to use the braille writing frame for many more years to come.

I, as a teacher myself, would like to see research conducted in developing an Upward Braille Writing Frame on which Braille can be written from left to right as it is read without having to reverse the shape of each letter. This means that the dots are embossed upwards and not downwards as at present. At the same time research could also be carried out with the existing standard Braille frame to make it a one-piece frame without a separate guide on which a full page can be written and to devise a method by which the back of the frame can be lifted without disturbing the paper thus enabling the child to check the entire page as and when he needs to.

Also some research is necessary to ensure that the frames are light in weight and at the same time durable and strong. The braille dots of course should come out as well-formed and of uniform size.

#### Stylus :

Stylis made in India today vary in quality and design. Most of them are not very satisfactory in their performance. It would be nice to have a stylus which forms beautifully uniform dots with ease and is comfortable to hold and write with. Research would certainly help in working out the correct alloy to be used to ensure that the metal portion does not corrode or rust as well as the thickness of the point and the metal portion to be





so that dots come out evenly and well formed and do not tear through the paper embossed for making a correct tactile figure e.g. while drawing a map of India, the eastern side has to be drawn on the left. Therefore a spur-wheel which will make dots upward would certainly be a great help. In making such spur wheels it is necessary that when upward embossing is done, the paper does not tear as it does with devices currently available. Also, the possibility of producing mathematical equipment in lighter metal or plastic should be explored.

#### Drawing Kits :

The ones currently available use cellophane paper. While the drawings come out satisfactorily, the paper is flimsy. It crumples and is difficult to store. It would be useful if more satisfactory paper could be found.

#### Tactile Maps :

Tactile maps and globes although fairly expensive are now available. These are suitable for schools. What is needed however is an inexpensive, easy to use, make-it-yourself kit which every teacher in a school, mobility instructor or for that matter any instructor in any programme for the blind can use to draw out maps and tactile pictures. This should also be such that blind children and adults can make the maps and pictures for themselves.

#### Adaptation of existing educational aids for sighted children :

Meaningful aids, that teach as well as entertain, play a vital role in the initial education of children and are an important part of their growth. These are very attractive and effective aids available for sighted children for learning to count, to read, to differentiate between various sounds and surfaces,





geometrical objects to identify shapes and other aids to build up basic concepts. We must start making use of these aids. Therefore, apart from designing specialized basic equipment mentioned earlier, useful research can be carried out for the adaptation of existing educational aids, montessorie equipment toys, games, models etc. so that they are converted into attractive audio-tactile aids for the blind.

For all these aids and equipment, it is necessary that the cost is kept down to ensure that the items produced are within the reach of the institutions for the blind and blind persons themselves. Their production also needs to be on a scale where they are easily and readily available and the present long waiting periods are avoided.

In my opinion the items referred to so far constitute what I regard as basic aids and equipment and where research by scientists and technologists needs to be carried out initially and immediately.

Funds permitting, research could also be carried out in developing sophisticated reading and writing machines. Considerable research has been and is continuing to be carried out in western countries in this area. The 'Kurzweil Reading Machine' translates print into synthetic speech in English. The 'Optacon' reading device translates print into vibrating tactile forms. A prototype of the 'Optacon Speech Plus' has been produced and is currently being tested. Machines converting print into Braille are also now available, Electric Braille Writing Machines and Computers are being used to facilitate the work of transcription into Braille.

Taking advantage of the existing research in the west and attempting to produce similar items for use in India for the Indian languages beginning with Hindi and at a much lower cost





should not be ruled out as an area of research. A reading machine even if it cannot be owned individually would be of tremendous value in public libraries, school libraries etc., thereby opening up the Floodgates of knowledge for the blind. This in fact could prove to be as significant for the blind as the invention of Braille itself 150 years ago.

### Tests :

Various tests have been designed and are in use with sighted children - intelligence tests, aptitude tests, performance tests, achievement tests and so on. As far as the blind are concerned the only test designed is the Vithoba Paknikar Test which is a performance test. While it has been tested and found to be effective, it is unfortunately not being widely used. Perhaps this is because not enough psychologists and educators are interested. It would be useful if specialists in the field of testing would take up the work of applying this test widely. Also, I wonder whether some of the other existing tests being used with sighted children can be adapted for use with blind children. My request to researchers would be that they should look into this possibility and give us their opinion on the feasibility of such adaptation. The use of standardised tests would have the advantage of giving us results which could be compared with results amongst the general child population. This would be more meaningful than specialised tests for the blind only.

I have tried to indicate some areas of research to meet the very ordinary needs of school going blind children and those who work with them. In some cases research is bound to result in very fruitful results which in turn should lead to an improvement in the standard of education. In some cases on the other hand research may not bring forth any significant results but even in the process of research and experimentation, I am confident that new ideas will be thrown up which will be of benefit.

(This paper was presented at the National Seminar on the Role of Science and Technology in the Service of the Blind, held on 19th December, 1981 in Bombay).





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